

# MONTHLY NOTICES

## \* OF THE

### ROYAL ASTRONOMICAL SOCIETY.

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No. 8

Captain de W. ABNEY, R.E., C.B., D.C.L., F.R.S, President,  
in the Chair.

The Rev. John Thomas Windmill Claridge, B.A., 3 Albert  
Road, Tamworth, Staffordshire ;

David Goudie Simpson, 199 Camberwell Grove, Denmark  
Hill ;

The Rev. Ernest Harrison Smith, M.A., R.N., H.M.S.  
*Tourmaline*, North American and West Indian Station ;  
and

Sir John Benjamin Stone, The Grange, Erdington, near Bir-  
mingham,

were balloted for and duly elected Fellows of the Society.

The following candidates were proposed for election as  
Fellows of the Society, the names of the proposers from personal  
knowledge being appended :—

George Cox Bompas, 121 Westbourne Terrace, Hyde Park,  
W. (proposed by A. Cowper Ranyard) ;

Bryan Cookson, Magdalen College, Oxford (proposed by H.  
H. Turner) ; and

Lieut. Basil Taylor, R.N., H.M.S. *Blake*, North American  
Station (proposed by Sir Josiah Rees).

Eighty presents were announced as having been received  
since the last meeting, including amongst others :—

The Photochronograph (three papers), presented by George-  
town College Observatory ; Agnes Giberne, The Starry Skies,

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presented by the author ; Müller and Kempf, *Photometrische Durchmusterung des nördlichen Himmels, Theil I.* (Potsdam Observatory Publications, vol. ix.), presented by the Observatory ; Pulkowa Observations, vol. x., *Mesures micrométriques des étoiles doubles*, presented by the Observatory ; Series of enlargements of portions of the lunar surface from negatives taken at the Lick Observatory, presented by Dr. Weinek ; Series of original negatives of *Jupiter*, presented by the Lick Observatory ; two photographs of Gale's Comet, taken at Sydney Observatory, presented by H. C. Russell.

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*On the Dimensions of Saturn's Disc.* By Hermann Struve.

An exact determination of a planet's diameter necessarily meets with great difficulties, especially of optical origin. On account of the imperfect union of the rays of light passing the object-glass, the boundaries of a planet's disc are surrounded by a bright secondary spectrum, and are not sharply defined. This defect of distinctness is still further increased by diffraction and by the unsteadiness of the atmosphere. Further, the dispersion of light in our atmosphere produces different coloration on the southern and on the northern boundary of the planet. The decrease of brightness of the disc from the centre to the borders, together with the atmosphere of the planet, will also contribute to deteriorate the distinctness of the boundaries. From consideration of all these troublesome causes it is evident that what we accept as boundary is open to a wide range, and that, from this reason, the accuracy of the measures will be greatly inferior to that which we are used to attain in the observation of fixed stars. This uncertainty sufficiently explains both the differences in the determinations of diameter obtained by different observers, and their dependence upon accidental circumstances—as, for instance, the quality of the images, the transparency of the air, the brightness and colour of the field, &c.

Experience has also proved that determinations of diameter depend in some degree upon the micrometer employed. Double-image micrometers have generally furnished smaller values than filar micrometers. The origin of this difference is not yet sufficiently explained. No doubt with the filar micrometer the setting of the dark wire on the bright limb of the planet might easily be subject to constant errors. On the other hand a similar error of estimation may exist in producing the contact of the two images by a heliometer. In any case, the observations with a powerful refractor, compared with those made by a heliometer of comparatively small dimensions, are certainly superior in this respect, that the image in the focus is considerably larger, and thus the same magnifying power can be reached with eyepieces of greater focal length.